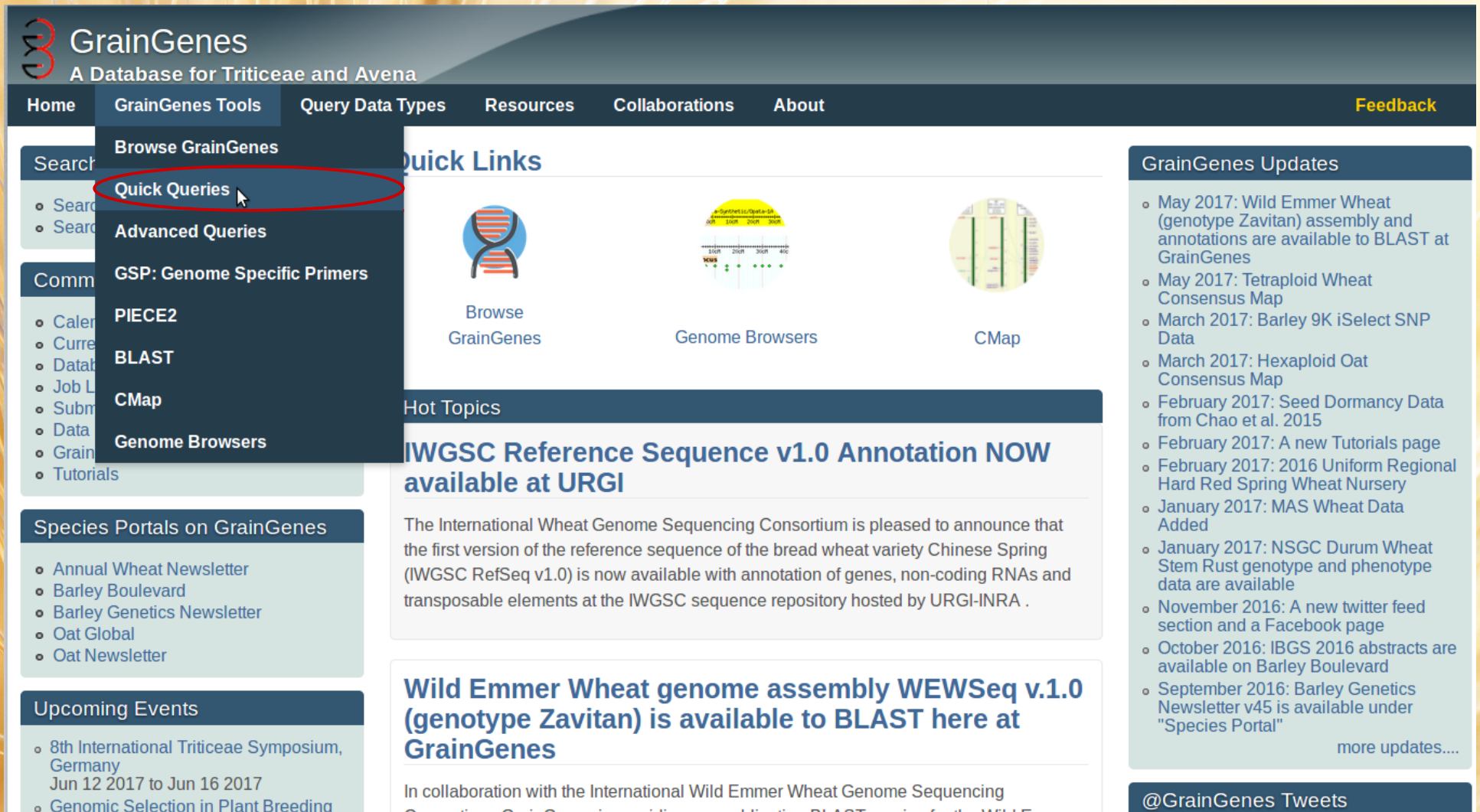


# GrainGenes Tutorial: Quick Queries

<https://wheat.pw.usda.gov>



# Quick Queries can be accessed from the GrainGenes Tools dropdown menu



The screenshot displays the GrainGenes website interface. The top navigation bar includes links for Home, GrainGenes Tools, Query Data Types, Resources, Collaborations, and About, along with a Feedback link. The 'GrainGenes Tools' dropdown menu is open, showing options: Browse GrainGenes, Quick Queries (highlighted with a red circle), Advanced Queries, GSP: Genome Specific Primers, PIECE2, BLAST, CMap, and Genome Browsers. The main content area features 'Quick Links' with icons for Browse GrainGenes, Genome Browsers, and CMap. Below this is a 'Hot Topics' section with two announcements: 'IWGSC Reference Sequence v1.0 Annotation NOW available at URGI' and 'Wild Emmer Wheat genome assembly WEWSeq v.1.0 (genotype Zavitan) is available to BLAST here at GrainGenes'. On the right, a 'GrainGenes Updates' section lists recent news items, and a '@GrainGenes Tweets' section is at the bottom right.

**GrainGenes**  
A Database for Triticeae and Avena

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**GrainGenes Tools**  
Browse GrainGenes  
**Quick Queries**  
Advanced Queries  
GSP: Genome Specific Primers  
PIECE2  
BLAST  
CMap  
Genome Browsers

**Quick Links**

Browse GrainGenes Genome Browsers CMap

**Hot Topics**

**IWGSC Reference Sequence v1.0 Annotation NOW available at URGI**

The International Wheat Genome Sequencing Consortium is pleased to announce that the first version of the reference sequence of the bread wheat variety Chinese Spring (IWGSC RefSeq v1.0) is now available with annotation of genes, non-coding RNAs and transposable elements at the IWGSC sequence repository hosted by URGI-INRA .

**Wild Emmer Wheat genome assembly WEWSeq v.1.0 (genotype Zavitan) is available to BLAST here at GrainGenes**

In collaboration with the International Wild Emmer Wheat Genome Sequencing Consortium, GrainGenes is providing an online BLAST service for the Wild Emmer

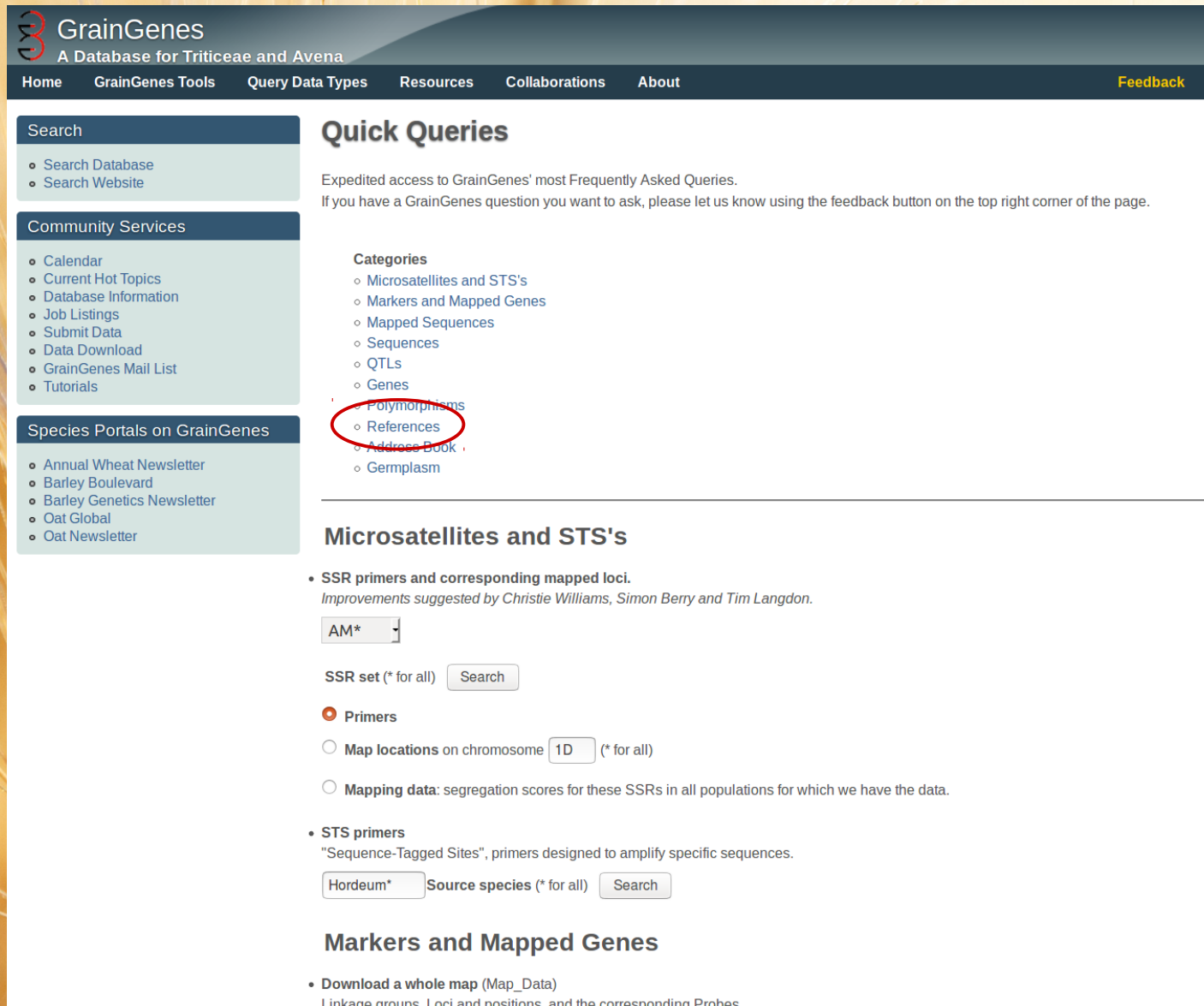
**GrainGenes Updates**

- May 2017: Wild Emmer Wheat (genotype Zavitan) assembly and annotations are available to BLAST at GrainGenes
- May 2017: Tetraploid Wheat Consensus Map
- March 2017: Barley 9K iSelect SNP Data
- March 2017: Hexaploid Oat Consensus Map
- February 2017: Seed Dormancy Data from Chao et al. 2015
- February 2017: A new Tutorials page
- February 2017: 2016 Uniform Regional Hard Red Spring Wheat Nursery
- January 2017: MAS Wheat Data Added
- January 2017: NSGC Durum Wheat Stem Rust genotype and phenotype data are available
- November 2016: A new twitter feed section and a Facebook page
- October 2016: IBGS 2016 abstracts are available on Barley Boulevard
- September 2016: Barley Genetics Newsletter v45 is available under "Species Portal"

more updates....

@GrainGenes Tweets

# Quick Queries



**GrainGenes**  
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**Search**

- Search Database
- Search Website

**Community Services**

- Calendar
- Current Hot Topics
- Database Information
- Job Listings
- Submit Data
- Data Download
- GrainGenes Mail List
- Tutorials

**Species Portals on GrainGenes**

- Annual Wheat Newsletter
- Barley Boulevard
- Barley Genetics Newsletter
- Oat Global
- Oat Newsletter

## Quick Queries

Expedited access to GrainGenes' most Frequently Asked Queries.  
If you have a GrainGenes question you want to ask, please let us know using the feedback button on the top right corner of the page.

**Categories**

- Microsatellites and STS's
- Markers and Mapped Genes
- Mapped Sequences
- Sequences
- QTLs
- Genes
- Polymorphisms
- References**
- Address Book
- Germplasm

---

## Microsatellites and STS's

- SSR primers and corresponding mapped loci.**  
*Improvements suggested by Christie Williams, Simon Berry and Tim Langdon.*  
  
SSR set (\* for all)
- ☒ **Primers**
- ☐ **Map locations** on chromosome  (\* for all)
- ☐ **Mapping data:** segregation scores for these SSRs in all populations for which we have the data.

- STS primers**  
"Sequence-Tagged Sites", primers designed to amplify specific sequences.  
 Source species (\* for all)

## Markers and Mapped Genes

- Download a whole map** (Map\_Data)  
Linkage groups, Loci and positions, and the corresponding Probes.

- The Quick Queries page contains pre-made queries for common database searches
- At the top of the page is a list of categories for searches
- Clicking on one will navigate you to the corresponding part of the page
- For this tutorial, we will use the References Quick Query



# Quick Queries - References

## References

- Search by Author, Keyword, and/or Date.  
(Author and Keyword can be left blank. "since" must be a number.)

Anderson\* Author

glutenin Keyword, since

1980 Search

- Search reference titles and keywords.  
*Suggested by Victoria Carollo.*

- "OR" search

Keyword 1  ☒ Keyword 1 only

Keyword 2  ☐ Keyword 1 or 2

Keyword 3  ☐ Keyword 1 or 2 or 3

Keyword 4  ☐ Keyword 1 or 2 or 3 or 4

Keyword 5  ☐ Keyword 1 or 2 or 3 or 4 or 5

Search

- "AND" search

Keyword 1

Keyword 2  ☒ Keywords 1 and 2

Keyword 3  ☐ Keywords 1 and 2 and 3

Keyword 4  ☐ Keywords 1 and 2 and 3 and 4

Keyword 5  ☐ Keywords 1 and 2 and 3 and 4 and 5

Search

- Finding specific publications of interests can be difficult in the GrainGenes database browser because all articles are listed under their reference ids. Without knowing the id, locating a specific paper is difficult
- The References Quick Query allows you to search through publications in GrainGenes by topic, authors, and year of publication
- The "AND" and "OR" searches allow the use of multiple keywords in your search

# Quick Queries - References

## References


- Search by Author, Keyword, and/or Date.  
(Author and Keyword can be left blank. "since" must be a number.)

Author

Keyword,  since

- Search reference titles and keywords.  
*Suggested by Victoria Carollo.*

- For example, we can search for articles on stripe rust that have been published since 2016
- Enter 'stripe rust' as a keyword and 2016 as the years and click Search
- Our results are then pulled up in a page like the one on the right

 **GrainGenes**  
A Database for Triticeae and Avena

Home GrainGenes Tools Query Data Types Resources Collaborations About [Feedback](#)

### GrainGenes SQL Interface

This page allows you to perform raw SQL queries directly. This is the ultimate power query. We don't know of any other Web-accessible databases that open this privilege to their users. It entails some risk but we're confident that it's minimal because we know our users are responsible. But, we hope, not timid. We want this interface to be used. Please [click here](#) for full information on how to use it.

Premade Queries:

SQL query: 

```
-- References by Author, Keyword, Date
select
distinct
reference.year as Year,
reference.name as Reference,
author.name as Author,
colleague.name as Address
```

[Schema: Diagrams](#) | [Table definitions](#)

[ TOP | <<25 | 1 - 25 of 31 | >>25 | BOTTOM ]

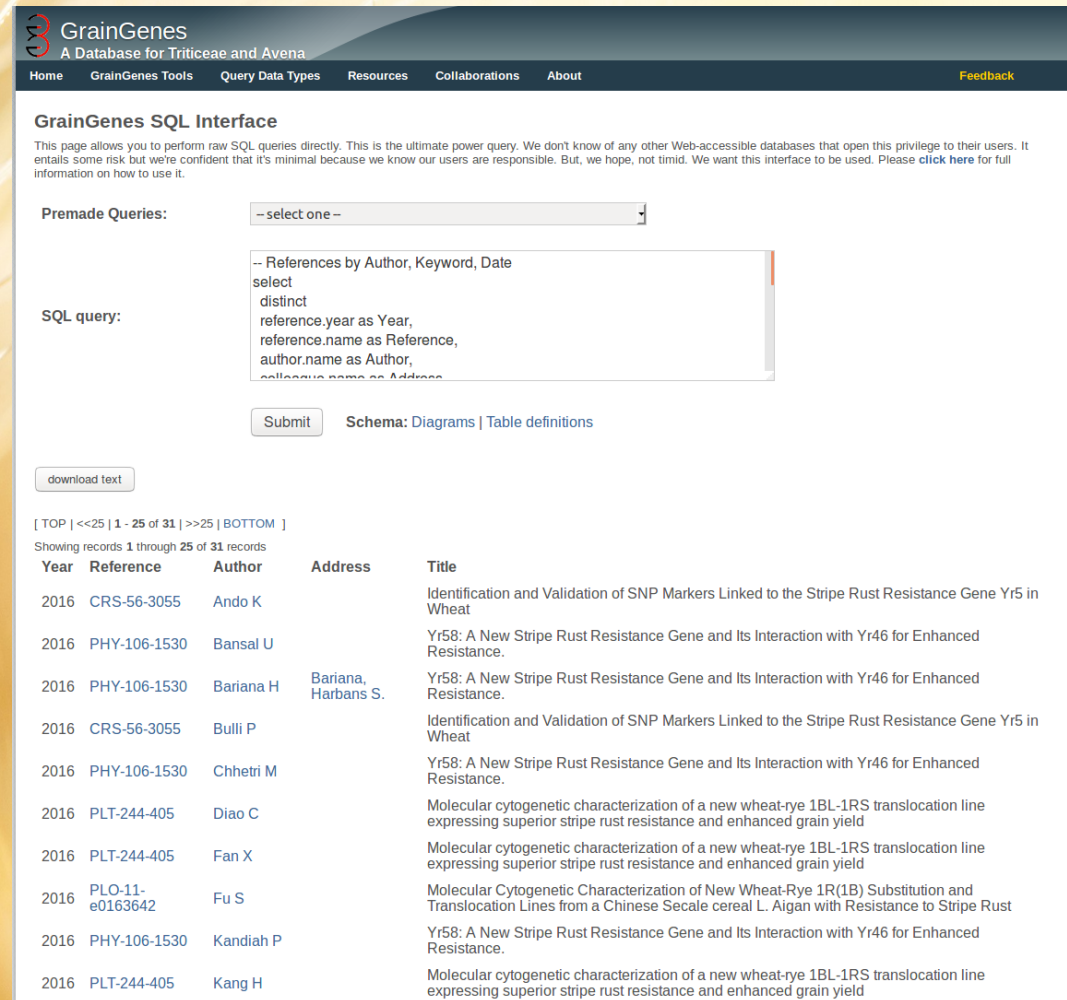
Showing records 1 through 25 of 31 records

Year	Reference	Author	Address	Title
2016	CRS-56-3055	Ando K		Identification and Validation of SNP Markers Linked to the Stripe Rust Resistance Gene Yr5 in Wheat
2016	PHY-106-1530	Bansal U		Yr58: A New Stripe Rust Resistance Gene and Its Interaction with Yr46 for Enhanced Resistance.
2016	PHY-106-1530	Bariana H	Bariana, Harbans S.	Yr58: A New Stripe Rust Resistance Gene and Its Interaction with Yr46 for Enhanced Resistance.
2016	CRS-56-3055	Bulll P		Identification and Validation of SNP Markers Linked to the Stripe Rust Resistance Gene Yr5 in Wheat
2016	PHY-106-1530	Chhetri M		Yr58: A New Stripe Rust Resistance Gene and Its Interaction with Yr46 for Enhanced Resistance.
2016	PLT-244-405	Diao C		Molecular cytogenetic characterization of a new wheat-rye 1BL-1RS translocation line expressing superior stripe rust resistance and enhanced grain yield
2016	PLT-244-405	Fan X		Molecular cytogenetic characterization of a new wheat-rye 1BL-1RS translocation line expressing superior stripe rust resistance and enhanced grain yield
2016	PLO-11-e0163642	Fu S		Molecular Cytogenetic Characterization of New Wheat-Rye 1R(1B) Substitution and Translocation Lines from a Chinese Secale cereal L. Aigan with Resistance to Stripe Rust
2016	PHY-106-1530	Kandiah P		Yr58: A New Stripe Rust Resistance Gene and Its Interaction with Yr46 for Enhanced Resistance.
2016	PLT-244-405	Kang H		Molecular cytogenetic characterization of a new wheat-rye 1BL-1RS translocation line expressing superior stripe rust resistance and enhanced grain yield



# Quick Queries - References Results

- The Results Page shows the output of our query, all articles that matched our search terms
- The actual SQL query with which we searched the GrainGenes database is shown in the box above our results
- There are some repeats in the results because the same article is listed for each of its authors.
- To consolidate them, we can make a quick adjustment to the original SQL query



The screenshot displays the GrainGenes SQL Interface. At the top, the header includes the GrainGenes logo and navigation links: Home, GrainGenes Tools, Query Data Types, Resources, Collaborations, About, and Feedback. The main section is titled "GrainGenes SQL Interface" and contains a disclaimer about the power of raw SQL queries. Below this, there are "Premade Queries" and a "SQL query:" input box. The "SQL query:" box contains the following query:

```
-- References by Author, Keyword, Date
select
distinct
reference.year as Year,
reference.name as Reference,
author.name as Author,
colleague.name as Address
```

Below the query box is a "Submit" button and a "Schema: Diagrams | Table definitions" link. A "download text" button is also present. The results section shows a table with 31 records, displaying columns for Year, Reference, Author, Address, and Title. The table lists various research articles related to wheat stripe rust resistance.

Year	Reference	Author	Address	Title
2016	CRS-56-3055	Ando K		Identification and Validation of SNP Markers Linked to the Stripe Rust Resistance Gene Yr5 in Wheat
2016	PHY-106-1530	Bansal U		Yr58: A New Stripe Rust Resistance Gene and Its Interaction with Yr46 for Enhanced Resistance.
2016	PHY-106-1530	Bariana H	Bariana, Harbans S.	Yr58: A New Stripe Rust Resistance Gene and Its Interaction with Yr46 for Enhanced Resistance.
2016	CRS-56-3055	Bullli P		Identification and Validation of SNP Markers Linked to the Stripe Rust Resistance Gene Yr5 in Wheat
2016	PHY-106-1530	Chhetri M		Yr58: A New Stripe Rust Resistance Gene and Its Interaction with Yr46 for Enhanced Resistance.
2016	PLT-244-405	Diao C		Molecular cytogenetic characterization of a new wheat-rye 1BL-1RS translocation line expressing superior stripe rust resistance and enhanced grain yield
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2016	PLT-244-405	Kang H		Molecular cytogenetic characterization of a new wheat-rye 1BL-1RS translocation line expressing superior stripe rust resistance and enhanced grain yield

# Quick Queries - Adjusting the Query

```
-- References by Author, Keyword, Date
select
  distinct
    reference.year as Year,
    reference.name as Reference,
    author.name as Author,
    colleague.name as Address,
    reference.title as Title
from reference
  inner join referenceauthor on reference.id =
referenceauthor.referenceid
  inner join author on referenceauthor.authorid = author.id
  left join colleague on author.fullname_colleagueid =
colleague.id
-- left join to include references without Keyword data:
  left join referencekeyword on reference.id =
referencekeyword.referenceid
  left join keyword on referencekeyword.keywordid =
keyword.id
where author.name like '%'
  and ( reference.title like '%stripe rust%' or
        keyword.name like '%stripe rust%' )
  and reference.year >= 2016
order by reference.year desc, author.name
```



```
-- References by Author, Keyword, Date
select
  distinct
    reference.year as Year,
    reference.name as Reference,
    --author.name as Author,
    --colleague.name as Address,
    reference.title as Title
from reference
  inner join referenceauthor on reference.id =
referenceauthor.referenceid
  inner join author on referenceauthor.authorid = author.id
  left join colleague on author.fullname_colleagueid =
colleague.id
-- left join to include references without Keyword data:
  left join referencekeyword on reference.id =
referencekeyword.referenceid
  left join keyword on referencekeyword.keywordid =
keyword.id
where author.name like '%'
  and ( reference.title like '%stripe rust%' or
        keyword.name like '%stripe rust%' )
  and reference.year >= 2016
order by reference.year desc
```

The above edits to the SQL query (commenting out author.name as Author, and colleague.name as Address, and removing ', author.name' from the 'order by' statement will output a consolidated list of papers on stripe rust contained in GrainGenes that have been published since 2016



# Quick Queries - Adjusted Results

## GrainGenes SQL Interface

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Premade Queries:

-- select one --

SQL query:

```
-- References by Author, Keyword, Date
select
  distinct
    reference.year as Year,
    reference.name as Reference,
    author.name as Author,
    colleague.name as Address
```

Submit

Schema: [Diagrams](#) | [Table definitions](#)

[download text](#)

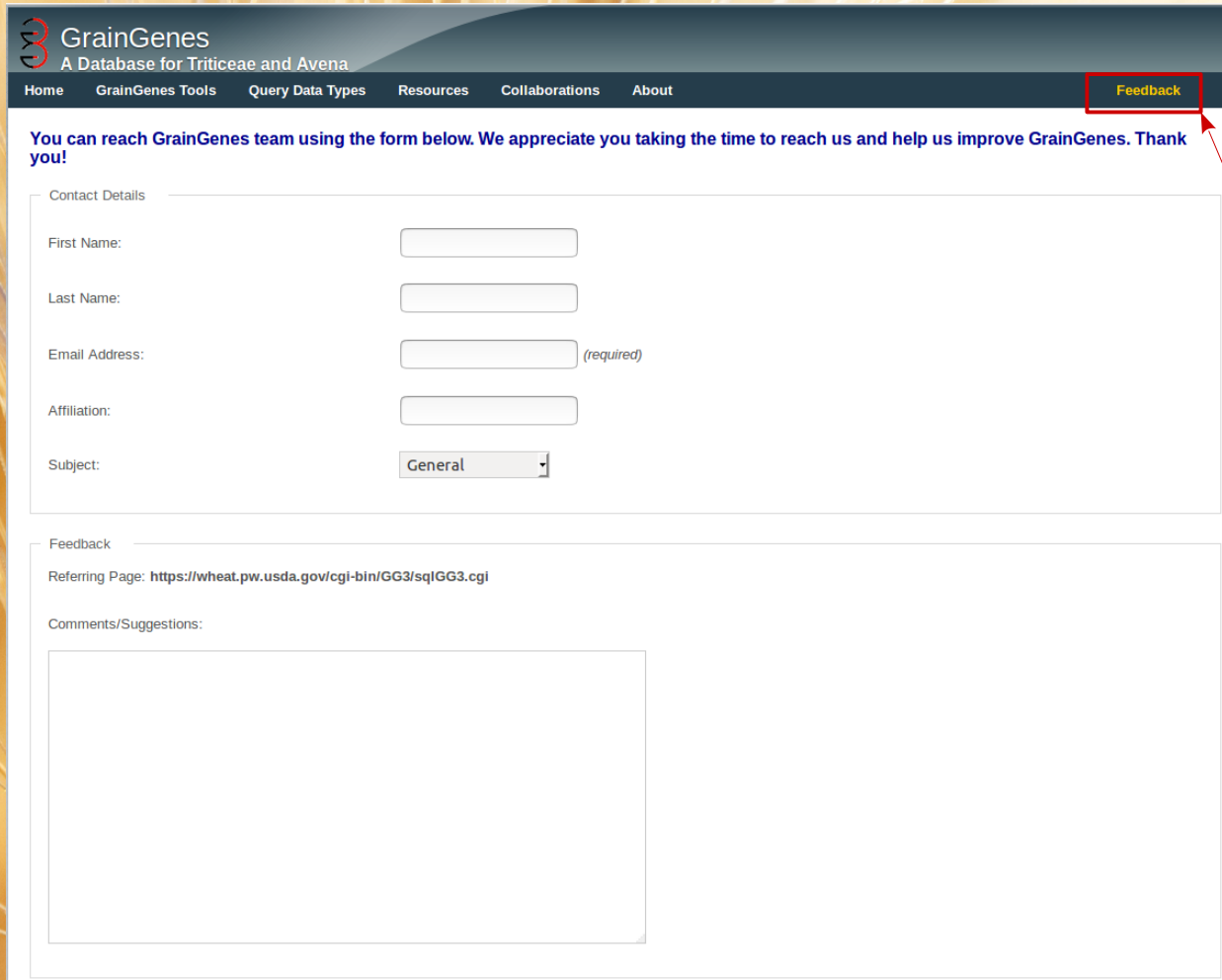
Showing records 1 through 4 of 4 records

Year	Reference	Title
2016	<a href="#">PHY-106-1530</a>	Yr58: A New Stripe Rust Resistance Gene and Its Interaction with Yr46 for Enhanced Resistance.
2016	<a href="#">PLT-244-405</a>	Molecular cytogenetic characterization of a new wheat-rye 1BL-1RS translocation line expressing superior stripe rust resistance and enhanced grain yield
2016	<a href="#">PLO-11-e0163642</a>	Molecular Cytogenetic Characterization of New Wheat-Rye 1R(1B) Substitution and Translocation Lines from a Chinese Secale cereal L. Aigan with Resistance to Stripe Rust
2016	<a href="#">CRS-56-3055</a>	Identification and Validation of SNP Markers Linked to the Stripe Rust Resistance Gene Yr5 in Wheat

- By hitting Submit again, we can get the adjusted results
- There are currently four papers on stripe rust in GrainGenes
- By clicking on the Reference ID, you can see the Reference Report page for each paper
- New references are being added to GrainGenes daily!



# Feedback



**GrainGenes**  
A Database for Triticeae and Avena

Home GrainGenes Tools Query Data Types Resources Collaborations About **Feedback**

You can reach GrainGenes team using the form below. We appreciate you taking the time to reach us and help us improve GrainGenes. Thank you!

Contact Details

First Name:

Last Name:

Email Address:  (required)

Affiliation:

Subject:

Feedback

Referring Page: <https://wheat.pw.usda.gov/cgi-bin/GG3/sqlGG3.cgi>

Comments/Suggestions:

- If you have any questions, have suggestions for new Quick Queries, want to submit your data to GrainGenes, or anything else, please contact us!
- Our Feedback button is at the top right corner of every page, and we'd love to hear from you!